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Assessment of knowledge, attitude and practice about thyroid disorder before and during pregnancy among adult female patient in Northern region of Saudi Arabia

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ABSTRACT

Background: Knowledge, attitude, and practice are an integral component in the management of thyroid disorders during pregnancy. Therefore, this study aimed to assess knowledge, attitude and practice about thyroid disorder before and during pregnancy among adult female patient in Northern region of Saudi Arabia. **Methods:** The design was cross-sectional research performed among 264 females with and without thyroid disease. The participants were selected using a stratified method; the target age group was women in reproductive age. A structured questionnaire was consisted of two parts, sociodemographic characters and knowledge, attitude, and practice part (KAP) used to collect the data. **Results:** There were 264 females, the frequency of thyroid diseases among the studied females was 62.5%, and hypothyroidism was the most prevalent 75.8%, and the diseased participants (98.2%) know that thyroid gland is located in the anterior part of the neck. However, the knowledge, attitude, and practice were suboptimal regarding other components of the questionnaire. **Conclusion:** KAP were suboptimal among females in the Northern region of Saudi Arabia, increasing the awareness about this important health issue is recommended to prevent the lethal consequences.

Keywords: thyroid, awareness, females, Saudi Arabia.

1. INTRODUCTION

Thyroid disorders are common endocrine problems which can affect the pregnancy and can be severe enough to threaten the mother and her fetus life.



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Hypothyroidism is a hypofunction of thyroid gland resulting in decrease of thyroid hormone secretion. Hypothyroidism is the most common thyroid abnormality associated with pregnancy, affects 3-5% of pregnant ladies, subclinical hypothyroidism is more common than the overt hypothyroidism. When pregnancy is confirmed, about half of the previously diagnosed patients need to increase the levothyroxine dose to by 30% (Teng et al., 2013). Almousa et al., (2018) performed a cross sectional study to assess the awareness about thyroid diseases among general population in Riyadh, among 870 participants there were 573 (65.9%) females, and the study found that only 17% of participants were aware about the relation between thyroid disorders and menstrual disturbance, recurrent abortion, and stillbirth cases at the end they said that the overall awareness was low.

Ghimire et al., (2019) also performed a cross sectional study to measure awareness of thyroid disorder among females, the total participants were 105 majority of them are married 91 (87%) , they found 37 (53%) of the participants had poor knowledge about thyroid diseases in general both hypothyroidism and hyperthyroidism (Ghimire et al., 2019). Another study in India was generally assessing the knowledge, attitude and practice in 500 hypothyroidism patients (72.4%) of them were females most of the participants had poor information about their disease including the effect of hypothyroidism in menstruation (Sethi et al., 2018). Iodine is important for thyroid gland function and according to this a study was focusing on this point showing that suboptimal iodine status in females of childbearing age may be caused by inappropriate practices, but not to knowledge and attitude (Mirmiran et al., 2013).

The prevalence of thyroid abnormalities (both hypo and hyper) was high among pregnant females with related adverse maternal and fetal outcomes in two different studies, and the study recommends the routine thyroid dysfunction screening to prevent the adverse outcome in pregnancy (Ajmani et al., 2014; Saraladevi et al., 2016). A study was focusing in the subclinical hypothyroidism among pregnancy and asses the benefits of treating the condition, the study was applied on 5405 pregnant females with subclinical hypothyroidism, the study found that the treatment of subclinical hypothyroidism among pregnant ladies was associated with decreased threat of pregnancy loss especially in patients with pretreatment TSH concentration of 4.1- 10 mIU/L (Maraka et al., 2017).

A recent study was conducted in United State to assess the knowledge, Attitudes, beliefs, and treatment burden related to the use of levothyroxine in hypothyroid pregnant women and they support the need for increasing effective communication and adjusted counseling for fears addressing and suspicions about the advantages and disadvantages of using LT4 during pregnancy (Tolozza et al., 2021). Thyroid diseases in general and hypothyroidism mostly may significantly affect the mother and the fetus Especially when it is neglected (Teng et al., 2013), we aim in this study to assess knowledge, attitude and practice about thyroid disease before and during pregnancy among adult female patients in the Northern region, 2020.

Aim of this study

To evaluate the level of knowledge, attitude and practice about thyroid disease before and during pregnancy among adult female patients in Northern region

Objectives

To evaluate the level of awareness and knowledge of the importance of counseling before pregnancy;

Evaluate the level of knowledge, awareness among thyroid disease patient about importance of follow up in endocrine clinic.

To assess the level of knowledge among adult female about impact of thyroid disorders during pregnancy in Northern region, Saudi Arabia.

2. METHODS

Type of the study and participants

This is a cross-sectional research performed in Northern region, Saudi Arabia during the year 2020-2021. The study was conducted among 264 females with and without thyroid disease. The selection of participants was based on a stratified method; the target age group was 18-45 years age group. Those below 18 and above 45 years were excluded from the study.

Measures

The used questionnaire for data collection is structured in two parts, sociodemographic characters and knowledge, attitude, and practice part (KAP). The knowledge part consisted of eight questions (choices questions ranging from two to four stems) asking about the location of the thyroid gland and function of the thyroid hormone, symptoms of thyroid dysfunction, the sample needed to test thyroid function, if need to consult a doctor before pregnancy and to adjust the thyroxine dose before pregnancy, and the

complications of thyroid disorders if left untreated. The attitude and practice consisted of five questions about the need to measure the TSH, the normal range of TSH, if the patient is eager to have normal thyroid hormone, if taking thyroxine, and if the patient is not taking thyroxine what is the reason behind: is it fear from it is side effects of the patient is taking an alternative.

Ethical consideration

The participant's consents had taken before participation, for the research approval was taken from the ethical committee in the college of medicine, University of Tabuk, Saudi Arabia.

Statistics

All data were analyzed by SPSS version 22. Categorical data were presented as numbers and percentages and were analyzed by using Chi-Square and Fisher's exact tests. $P < 0.05$ was considered statistically significant.

3. RESULTS

The study included 264 adult females residing in the northern regions of Saudi Arabia who fulfilled the questionnaire. Their age ranged from 18 to 45 years, and about half (49.2%) were from Tabuk, followed by AL-Gouf (20.1%). About two-thirds (64.8%) had university/post graduate education, and 69.3% were married. The greatest percent (47.2%) reported having 2-5 previous pregnancies. Among the women who get pregnant, 51.5% gave 2-5 child birth and 31.2% gave history of one miscarriage (Table 1). The frequency of thyroid diseases among the studied females was 62.5%, and hypothyroidism was the most prevalent (75.8%) as illustrated in Figures 1 and 2. The duration of thyroid disease ranged from one year or less (29.7%) to more than 10 years (23.6%) as shown in Figure 3.

Table 1 Characteristics of the study participants

		N	%
Age (years)	18-24	54	20.4%
	25-30	69	26.1%
	31-35	34	12.9%
	36-40	34	12.9%
	41-45	73	27.7%
Educational level	Elementary	5	1.9%
	Preparatory	14	5.3%
	Secondary	45	17.0%
	Diplom	29	11.0%
	University	162	61.4%
Northern region	Post graduate	9	3.4%
	AL-Gouf	53	20.1%
	Northern borders	43	16.3%
	Tabuk	130	49.2%
	Hail	38	14.4%
Marital status	Single	81	30.7%
	Married	183	69.3%
Number of previous pregnancies	>8	13	7.2%
	6-8	44	24.4%
	2-5	85	47.2%
	1	27	15.5%
	No	11	6.1%
How many times did you have a child?	>8	9	5.4%
	6-8	43	26.1%
	2-5	85	51.5%
	1	28	17.0%

How often did you get a miscarriage?	>1	45	26.4%
	1	53	31.2%
	No	72	42.4%

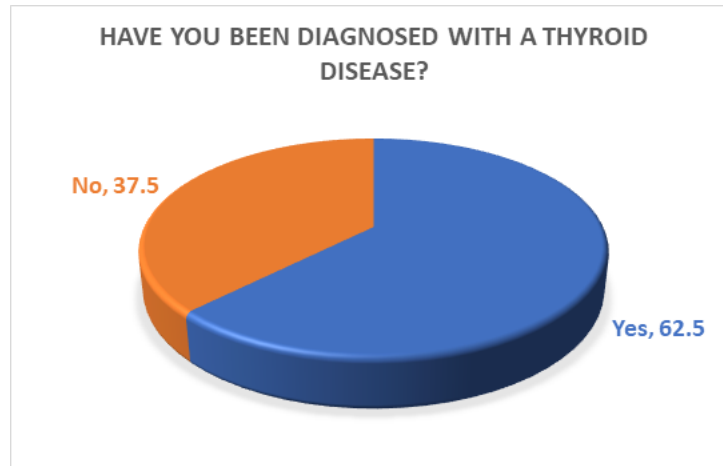


Figure 1 Frequency of thyroid disease among the study participants

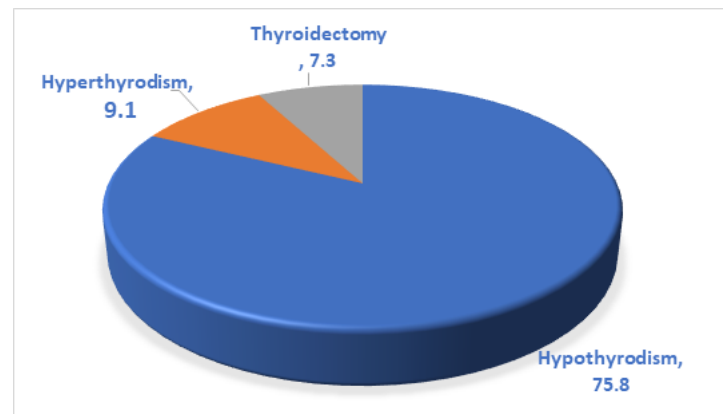


Figure 2 Types of thyroid diseases reported by the diseased participants

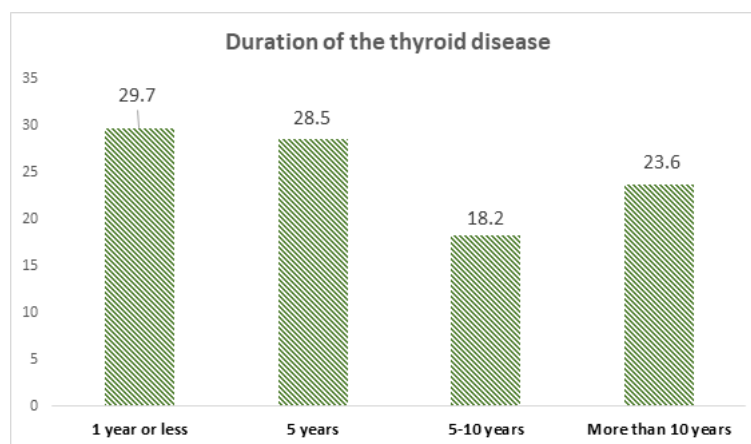


Figure 3 The reported duration of the thyroid diseases

Knowledge of thyroid gland and its diseases is demonstrated in Table 2. High percent of all participants (92.8%) and the diseased participants (98.2%) know that thyroid gland is located in the anterior part of the neck with a significant difference ($p < 0.001$). The majority of all as well as the diseased participants knew some functions of thyroid hormones (38.6% and 40.0%, respectively), whereas 19.7% and 17.6% of them did not know any function. Most of all (76.9%) and the diseased (81.8%)

participants reported two or more of the symptoms of thyroid hyperactivity ($p=0.014$). Knowledge of two or more symptoms of thyroid hypoactivity was recorded by 85.6% of all compared to 92.7% of the diseased participants ($p<0.001$).

Lack of knowledge about the correct sample for measuring the thyroid hormone was observed in 20.8% of all compared to 6.7% of the diseased subjects ($p<0.001$). Understanding the significance of consulting the doctor before planning for pregnancy was recognized both by all and the diseased subjects. 36.7% of all and 27.9% of the diseased females did not realize the need of the pregnant woman to adjust the dose or change the thyroid medication that was used before pregnancy ($p<0.001$). Concerning knowledge of the complications of untreated hypothyroidism, 46.2% of all and 46.7% of the diseased females stated two or more of them (Table 2).

Practices of participants with thyroid disease and their relation with the educational level are demonstrated in Table 3. Only 50.7% of the diseased participants did a TSH test during pregnancy. Seventy (42.4%) identified the correct normal value of TSH during the first three months of pregnancy of <2.5 unit/L. about half (50.3%) of the diseased females stated 100% What commitment and eagerness to have the thyroid gland at its normal levels during the period before pregnancy, with a significantly high percent reported by those having university/ post graduate education ($p=0.027$). More than a quarter (27.9%) of the participants did not take medications for hypothyroidism. The main reasons were the use of herbs instead of medicine (44.4%), or for fear of side effects (38.9%). Additionally, Figure 4 shows that thyroxine was the most frequently administered drug (93.8%).

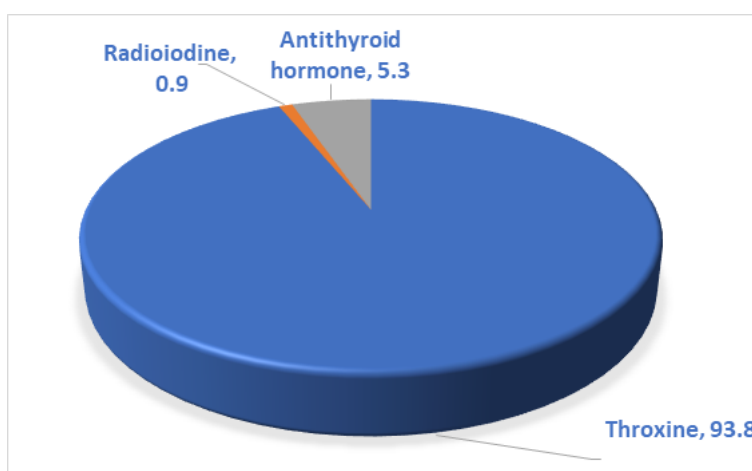


Figure 4 Types of drugs administered for thyroid diseases

Table 2 Knowledge of the study participants about thyroid disease

		Have you been diagnosed with a thyroid problem?						P value
		Yes		No		Total		
		N	%	N	%	N	%	
Where is the thyroid gland located?	Down the brain	2	1.2%	10	10.1%	12	4.5%	<0.001*
	On the kidneys	0	0.0%	6	6.1%	6	2.3%	
	In the anterior part of the neck	162	98.2%	83	83.8%	245	92.8%	
	Chest region	1	0.6%	0	0.0%	1	0.4%	
What are the functions of the thyroid hormones in the body?	Know all the functions	46	27.9%	21	21.2%	67	25.4%	0.373
	Don't know	29	17.6%	23	23.2%	52	19.7%	
	Knows one function	24	14.5%	19	19.2%	43	16.3%	
	Know some functions	66	40.0%	36	36.4%	102	38.6%	
Which of the following is symptom of thyroid hyperthyroidism?	Knows one symptom	30	18.2%	31	31.3%	61	23.1%	0.014*
	Knows two or more symptoms	135	81.8%	68	68.7%	203	76.9%	
Which of the following is symptom of hypothyroidism?	Knows one symptom	12	7.3%	26	26.3%	38	14.4%	<0.001*
	Knows two or more symptoms	153	92.7%	73	73.7%	226	85.6%	
The sample needed to measure	Stool	1	0.6%	0	0.0%	1	0.4%	<0.001*

thyroid hormones	Blood	150	90.9%	51	51.5%	201	76.1%	
	Don't know	11	6.7%	44	44.4%	55	20.8%	
	Saliva	3	1.8%	4	4.0%	7	2.7%	
Is it important to consult your doctor before planning for pregnancy?	Not important	2	1.2%	4	4.0%	6	2.3%	0.117
	Don't know	27	16.4%	24	24.2%	51	19.3%	
	Important	15	9.1%	11	11.1%	26	9.8%	
	Very important	121	73.3%	60	60.6%	181	68.6%	
Does the pregnant woman need to adjust the dose or change the thyroid medication that was used before pregnancy?	No	2	1.2%	8	8.1%	10	3.8%	<0.001*
	Don't know	46	27.9%	51	51.5%	97	36.7%	
	Yes	117	70.9%	40	40.4%	157	59.5%	
Knowledge of the complications of untreated hypothyroidism	Knows all	44	26.7%	27	27.3%	71	26.9%	0.523
	Knows two or more	77	46.7%	45	45.5%	122	46.2%	
	Knows one	25	15.2%	20	20.2%	45	17.0%	
	Don't know	19	11.5%	7	7.1%	26	9.8%	

*Significant at $p < 0.05$

Table 3 Practices of participants with thyroid disease and their relation with the educational level

		Educational level						P value
		Below university		University and higher		Total		
		N	%	N	%	N	%	
Did you do a TSH test during pregnancy?	No	36	56.3%	37	44.0%	73	49.3%	0.141
	Yes	28	43.8%	47	56.0%	75	50.7%	
What is the normal value of TSH during the first three months of pregnancy?	> 2.5 mIU/L	26	38.8%	38	38.8%	64	38.8%	0.569
	> 4 mIU/L	15	22.4%	16	16.3%	31	18.8%	
	< 2.5 mIU/L	26	38.8%	44	44.9%	70	42.4%	
What is the percentage of your commitment and your eagerness to have the thyroid gland at its normal levels during the period before pregnancy?	25.0%	17	26.6%	9	10.3%	26	17.2%	0.027*
	50.0%	7	10.9%	6	6.9%	13	8.6%	
	80.0%	15	23.4%	21	24.1%	36	23.8%	
	100.0%	25	39.1%	51	58.6%	76	50.3%	
Are you taking medications for hypothyroidism or hyperthyroidism?	No	18	26.9%	28	28.6%	46	27.9%	0.810
	Yes	49	73.1%	70	71.4%	119	72.1%	
If No, what is the reason for not taking the medicine?	Use herbs instead of medications	8	47.1%	8	42.1%	16	44.4%	0.427
	Fear of side effects	5	29.4%	9	47.4%	14	38.9%	
	I do not like medications	4	23.5%	2	10.5%	6	16.7%	

*Significant at $p < 0.05$

4. DISCUSSION

Present study was conducted on 264 women residing in 4 different regions located in the north of the Saudi Arabia belonging to different social status and educational level. The study reveals 92.8% know that thyroid gland is located in the anterior part of the neck. Only 25.4% know all functions of thyroid gland other 38.6% know some functions of thyroid. 85.6% of the women are aware of the symptoms of Hypothyroidism, 76.9% of the women are aware of the symptoms of Hyperthyroidism, a comparable percent (78.4 %) of the women known the important of consult the doctor before planning for pregnancy, 59.5% of the woman known the needed to adjust doses before pregnancy. 73.1% of the women known the complications of untreated hypothyroidism on the

pregnancy, while 42.4% of the women known the normal value of TSH during the first three months of pregnancy and 57.6% not known.

The present knowledge was better compared to a study published in India among women with hypothyroidism in which the majority did not know the meaning of thyroid gland and were not aware if the thyroxine dose should be escalated during pregnancy (Kumar et al., 2017). Optimizing TSH level during pregnancy is necessary for both fetal and maternal outcomes (Sullivan et al., 2017), in the present study, nearly one third were not aware of thyroxine adjustment during pregnancy. Increasing the awareness regarding this important issue should be thought to prevent mental dysfunction among the off springs (Thompson et al., 2018). The current findings of the suboptimal knowledge have been reported by previous studies (Singh et al., 2013; Kannan et al., 2010). In the attending study, most of the participants realize the significance of consulting a doctor before pregnancy. However, one third of them were not adherent to their medications, the current findings were in line with (Sethi et al., 2018).

5. CONCLUSION

Knowledge, attitude, and practice regarding thyroid dysfunction during pregnancy were suboptimal in Northern Region of the Kingdom of Saudi Arabia; more effort is needed to increase the awareness about this important issue.

Limitations

The study was limited by the small sample size because online questioner lack of response.

Author's contribution

All the authors contributed in the selection of the idea, proposal writing, data collection, data entry and analysis, results and discussion writing and final revision of the article.

Ethical approval

The study was approved by the Medical Ethics Committee of Tabuk University (Ethical NO. READ 0105).

Funding

This study has not received any external funding.

Conflict of Interest

The authors declare that there are no conflicts of interests.

Data and materials availability

All data associated with this study are presented in the paper.

REFERENCES AND NOTES

1. Ajmani SN, Aggarwal D, Bhatia P, Sharma M, Sarabhai V, Paul M. Prevalence of overt and subclinical thyroid dysfunction among pregnant women and its effect on maternal and fetal outcome. *J Obstet Gynaecol India* 2014; 64(2):105-110.
2. Almousa AI, Alotaibi AM. Survey of awareness of thyroid disorders among the Riyadh population, Central Region of Saudi Arabia. *Egypt J Hosp Med* 2018; 72(2):4039-44.
3. Ghimire MR, Thapa SG, Thapa L, Soti B. Awareness among Adult Females about Thyroid Disorder attending Neuro and Allied Clinic, Bhairahawa, Rupandehi, Nepal. *J Univers Coll Med Sci* 2019; 7(2):9-14.
4. Kannan S, Mukundan L, Mahadevan S, Sathya A, Kumaravel V, Bhat RV, Sriram U. Knowledge, Awareness and Practices (KAP) among patients with hypothyroidism attending endocrine clinics of community hospitals in Chennai. *Thyroid Res Pract* 2010; 7(1):11.
5. Kumar P, Khandelwal D, Mittal S, Dutta D, Kalra S, Katiyar P, Aggarwal V. Knowledge, Awareness, Practices and Adherence to Treatment of Patients with Primary Hypothyroidism in Delhi. *Indian J Endocrinol Metab* 2017; 21(3):429-433.
6. Maraka S, Mwangi R, McCoy RG, Yao X, Sangaralingham LR, Singh Ospina NM, O'Keeffe DT, De Ycaza AE, Rodriguez-Gutierrez R, Coddington CC 3rd, Stan MN, Brito JP, Montori VM. Thyroid hormone treatment among pregnant women with subclinical hypothyroidism: US national assessment. *BMJ* 2017; 356:i6865.
7. Mirmiran P, Nazeri P, Amiri P, Mehran L, Shakeri N, Azizi F. Iodine nutrition status and knowledge, attitude, and

- behavior in Tehranian women following 2 decades without public education. *J Nutr Educ Behav* 2013; 45(5):412-419.
8. Saraladevi R, Nirmala Kumari T, Shreen B, Usha Rani V. Prevalence of thyroid disorder in pregnancy and pregnancy outcome. *IAIM* 2016; 3(3):1-1.
 9. Sethi B, Khandelwal D, Vyas U. A cross-sectional survey to assess knowledge, attitude, and practices in patients with hypothyroidism in India. *Thyroid Res Pract* 2018; 15(1):15.
 10. Singh A, Sachan B, Malik NP, Sharma VK, Verma N, Singh CP. Knowledge, awareness, and practices among patients with thyroid swelling attending cytology clinic in a Medical College, Meerut. *IJCP Group of Publications* 2014; 24(8):753.
 11. Sullivan SD, Downs E, Popoveniuc G, Zeymo A, Jonklaas J, Burman KD. Randomized Trial Comparing Two Algorithms for Levothyroxine Dose Adjustment in Pregnant Women With Primary Hypothyroidism. *J Clin Endocrinol Metab* 2017; 102(9):3499-3507.
 12. Teng W, Shan Z, Patil-Sisodia K, Cooper DS. Hypothyroidism in pregnancy. *Lancet Diabetes Endo* 2013; 1(3):228-37.
 13. Thompson W, Russell G, Baragwanath G, Matthews J, Vaidya B, Thompson-Coon J. Maternal thyroid hormone insufficiency during pregnancy and risk of neurodevelopmental disorders in offspring: A systematic review and meta-analysis. *Clin Endocrinol (Oxf)* 2018; 88(4):575-584.
 14. Toloza FJK, Theriot SE, Singh Ospina NM, Nooruddin S, Keathley B, Johnson SM, Payakachat N, Ambrogini E, Rodriguez-Gutierrez R, O'Keeffe DT, Brito JP, Montori VM, Dajani NK, Maraka S. Knowledge, Attitudes, Beliefs, and Treatment Burden Related to the Use of Levothyroxine in Hypothyroid Pregnant Women in the United States. *Thyroid* 2021; 31(4):669-677.